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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,678	06/27/2003	Jai-Moo Yoo	69650/RSM	8273

7590 05/21/2007  
Cooper & Dunham LLP  
1185 Avenue of Americas  
New York, NY 10036

EXAMINER
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WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

MAIL DATE	DELIVERY MODE
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05/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/608,678

Applicant(s)

YOO ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 30, 2007 has been entered.

This is in response to the Amendment After Final dated March 5, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

**Claim Rejections - 35 USC § 112**

Claims **5 and 8** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 5 and 8 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Double Patenting

Claims **1-5 and 8** have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims **5-9** of copending Application No. **11/074,568** (Yoo et al.).

The rejection of claims 1-5 and 8 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-9 of copending Application No. 11/074,568 (Yoo et al.) has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **1, 3 and 8** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1), **WO 01/83855** ('855) and **Ameen et al.** (US Patent No. 6,361,673 B1).

The rejection of claims 1, 3 and 8 under 35 U.S.C. 103(a) as being unpatentable over DE 101 36 890 ('890), Kruger et al., WO 01/83855 ('855) and Ameen et al. has been withdrawn in view of Applicants' amendment.

II. Claim **2** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1), **WO 01/83855** ('855) and **Ameen et al.** (US Patent No. 6,361,673 B1) as applied to claims 1, 3 and 8 above, and further in view of **Lowenheim**

("Electroplating", © 1978, pp. 212-213).

The rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over DE 101 36 890 ('890), Kruger et al., WO 01/83855 ('855) and Ameen et al. as applied to claims 1, 3 and 8 above, and further in view of Lowenheim has been withdrawn in view of Applicants' amendment. Claim 2 has been cancelled.

III. Claims 4 and 5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1), **WO 01/83855** ('855) and **Ameen et al.** (US Patent No. 6,361,673 B1) as applied to claims 1, 3 and 8 above, and further in view of **Van Horn** ("Pulse Plating", Dynatronix, August 5, 1999, pp. 1-13).

The rejection of claims 4 and 5 under 35 U.S.C. 103(a) as being unpatentable over DE 101 36 890 ('890), Kruger et al., WO 01/83855 ('855) and Ameen et al. as applied to claims 1, 3 and 8 above, and further in view of Van Horn has been withdrawn in view of Applicants' amendment.

### ***Response to Amendment***

#### ***Terminal Disclaimer***

The terminal disclaimer filed on March 5, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application No. 11/074,568 has been reviewed and is accepted.

The terminal disclaimer has been recorded.

***Claim Rejections - 35 USC § 112***

Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3

lines 3-4, it appears that "a plating solution" is the same as the plating solution recited in claim 1, lines 7-11. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

lines 4-5, it appears that "a direct current electroplating process" is further limiting the electroplating process recited in claim 1, lines 3-4. However, it is unclear if it is. What is the relationship between the direct current electroplating process and the electroplating process?

Claim 4

lines 3-4, it appears that "a plating solution" is the same as the plating solution recited in claim 1, lines 7-11. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

lines 6-7, it appears that “a pulse current electroplating process (PC process)” is further limiting the electroplating process recited in claim 1, lines 3-4. However, it is unclear if it is. What is the relationship between the pulse current electroplating process and the electroplating process?

Claim 5

lines 3-4, it appears that “a plating solution” is the same as the plating solution recited in claim 1, lines 7-11. However, it is unclear if it is. If it is, then it is suggested that the word “a” be amended to the word -- the --.

lines 6-7, it appears that “a periodic reverse current plating process (PR process)” is further limiting the electroplating process recited in claim 1, lines 3-4. However, it is unclear if it is. What is the relationship between the periodic reverse current plating process and the electroplating process?

***Claim Rejections - 35 USC § 103***

Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1) [Kruger is the English equivalent of DE '890] in combination with **Lee et al.** (US Patent No. 6,346,181 B1).

Kruger teaches a method for manufacturing a biaxially textured metal material

comprising the steps of:

(a) depositing a biaxially textured surface metal layer **4** (= a biaxially textured metal layer) [page 1, [0011]; and page 2, [0031]] by an electroplating process (page 2, [0029] and [0030]; and Figs. 1 and 2) in a plating solution comprising nickel (page 2, [0025]) on the surface of a metal substrate **1** (= an endless substrate strip) having a crystalline orientation (page 1, [0009] and [0010]); and

(b) peeling the deposited biaxially textured metal layer **4a** off the metal substrate (= pulled off as a textured strip) [page 1, [0014]] wherein the peeled biaxially textured metal layer has substantially the same texture orientation as that of the metal substrate (= the endless substrate strip has a texture) [page 2, [0019]].

The method of Kruger differs from the instant invention because Kruger does not disclose the following:

a. Wherein the plating solution comprises 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 2~4 and 50~80°C, as recited in claim 1.

Kruger teaches a plating solution comprising nickel (page 2, [0025]).

Like Kruger, Lee teaches electroplating a biaxial textured nickel layer. Lee teaches that a Ni plating solution which allows a biaxial textured nickel layer to be deposited comprises 150-400 g/l nickel sulfate, 20-80 g/l nickel chloride, 20~80 g/l boric acid, at pH 1.5-5 and 40-80°C (col. 4, lines 7-22).



It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by Kruger with wherein the plating solution comprises 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 2~4 and 50~80°C because such a plating solution would have allowed the deposition of a biaxial textured nickel layer as taught by Lee (col. 4, lines 7-22).

It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination (MPEP § 2144.06 and § 2144.07).

b. Wherein the orientation is a single-crystalline or a quasi-single-crystalline orientation, as recited in claim 1.

Lee teaches that the biaxial texture is composed of three-dimensionally uniform crystal orientations and crystal planes just like single crystals (col. 1, lines 34-41).

The invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the biaxial texture is composed of three-dimensionally uniform crystal orientations and crystal planes just like single crystals as taught by Lee (col. 1, lines 34-41).

c. Wherein the electroplating process is a direct current electroplating

process (DC process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup>, the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 3.

Kruger teaches an electroplating process (page 2, [0029] and [0030]; and Figs. 1 and 2).

Lee teaches that for the electroplating, a direct current (DC) method, a pulse current (PL) method, and a periodic reverse current (PR) are all effective (col. 4, lines 23-25). A current density of 3-15 A/dm<sup>2</sup> is used for the direct current (DC) method (col. 4, lines 26-40; and Table 1).

Lee teaches that in order to provide a biaxial texture for a substrate it must have the (001) plane, which is almost perfectly preference-oriented in the c-axis, vertical to the substrate itself. If such a uniaxial texture is absent, no biaxial textures appear in the substrate. A texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an excellent biaxial texture (cubic crystal texture, (001), [001]) to form in a subsequent process (col. 3, lines 44-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by Kruger with wherein the electroplating process is a direct current electroplating process (DC process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup> because such a current density in a direct current electroplating process would have allowed the deposition of a biaxial textured nickel layer as taught by Lee (col. 4, lines 26-40; and

Table 1).

As to wherein the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, a texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an excellent biaxial texture (cubic crystal texture, (001), [001]) as taught by Lee (col. 3, lines 44-60).

d. Wherein the electroplating process is a pulse current electroplating process (PC process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup>, a cathode current time of 1~100 msec and a down time of 1~100 msec, the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 4.

Kruger teaches an electroplating process (page 2, [0029] and [0030]; and Figs. 1 and 2).

Lee teaches that that for the electroplating, a direct current (DC) method, a pulse current (PL) method, and a periodic reverse current (PR) are all effective (col. 4, lines 23-25). A current density of 3-20 A/dm<sup>2</sup> with a T1 of 1 msec-100 and a T2 of 1 msec-100 msec are used for the pulse current (PL) method (col. 4, lines 26-40; and Table 1).

Lee teaches that in order to provide a biaxial texture for a substrate it must have the (001) plane, which is almost perfectly preference-oriented in the c-axis, vertical to the substrate itself. If such a uniaxial texture is absent, no biaxial textures appear in the substrate. A texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an

excellent biaxial texture (cubic crystal texture, (001), [001]) to form in a subsequent process (col. 3, lines 44-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by Kruger with wherein the electroplating process is a pulse current electroplating process (PC process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup>, a cathode current time of 1~100 msec and a down time of 1~100 msec because such a current density and pulse in a pulse current electroplating process would have allowed the deposition of a biaxial textured nickel layer as taught by Lee (col. 4, lines 26-40; and Table 1).

As to wherein the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, a texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an excellent biaxial texture (cubic crystal texture, (001), [001]) as taught by Lee (col. 3, lines 44-60).

e. Wherein the electroplating process is a periodic reverse current plating process (PR process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup>, a cathode current time of 1~100 msec and an anode current time of 1~100 msec, the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 5.

Kruger teaches an electroplating process (page 2, [0029] and [0030]; and Figs. 1

and 2).

Lee teaches that that for the electroplating, a direct current (DC) method, a pulse current (PL) method, and a periodic reverse current (PR) are all effective (col. 4, lines 23-25). A current density of 3-20 A/dm<sup>2</sup> with a T1 of 1 msec-100 and a T2 of 1 msec-100 msec are used for the periodic reverse current (PR) [col. 4, lines 26-40; and Table 1].

Lee teaches that in order to provide a biaxial texture for a substrate it must have the (001) plane, which is almost perfectly preference-oriented in the c-axis, vertical to the substrate itself. If such a uniaxial texture is absent, no biaxial textures appear in the substrate. A texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an excellent biaxial texture (cubic crystal texture, (001), [001]) to form in a subsequent process (col. 3, lines 44-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by Kruger with wherein the electroplating process is a periodic reverse current plating process (PR process) under conditions of a cathode current density of 3~20 A/dm<sup>2</sup>, a cathode current time of 1~100 msec and an anode current time of 1~100 msec because such a current density and pulse in a periodic reverse current plating process would have allowed the deposition of a biaxial textured nickel layer as taught by Lee (col. 4, lines 26-40; and Table 1).

As to wherein the deposited metal layer having a texture fraction (TF) of 0.97 or

more on the (001) plane, a texture fraction (TF) of 0.95 or greater on the (001) plane guarantees an excellent biaxial texture (cubic crystal texture, (001), [001]) as taught by Lee (col. 3, lines 44-60).

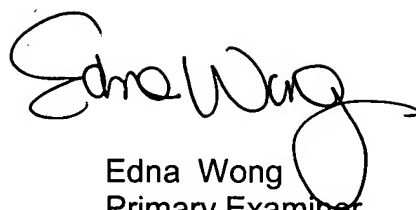
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
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